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REMARKS / ARGUMENTS

Status of Claims

Claims 1-37 are pending in the application and stand rejected. Applicant has amended Claims 1, 2, 16-33 and 36, has canceled Claim 37, and has added new Claims 38-42, leaving Claims 1-36 and 38-42 for consideration upon entry of the present Amendment.

Applicant respectfully submits that the rejections under 35 U.S.C. §102(b) and 35 U.S.C. §103(a) have been traversed, that no new matter has been entered, and that the application is in condition for allowance.

Claim Objections

The Examiner remarks that Applicant's amended claim language inferentially claims more than one switch, but also refers to "a switch", thereby introducing questionable antecedent basis for the more than one switch.

Applicant has amended Claim 1 and 36 to overcome this objection.

In view of the amendments set forth above, Applicant requests reconsideration and withdrawal of this objection, which Applicant considers to be overcome.

Rejections Under 35 U.S.C. §102(b)

Claims 1-34, 36 and 37 stand rejected under 35 U.S.C. §102(b) as being anticipated by Midya (U.S. Patent No. 6,348,781, hereinafter Midya).

Claims 2-4, 6-8, 15 and 34 stand rejected by Midya per the first Detailed Action.

Applicant traverses this rejection for the following reasons.

Applicant respectfully submits that "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, ***in a single prior art reference.***" *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). Moreover, "[t]he identical invention must be shown in as complete detail as is contained in the *** claim."

Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Furthermore, the single source must disclose all of the claimed elements "arranged as in the claim." Structural Rubber Prods. Co. v. Park Rubber Co., 749 F.2d 707, 716, 223 U.S.P.Q. 1264, 1271 (Fed. Cir. 1984). Missing elements may not be supplied by the knowledge of one skilled in the art or the disclosure of another reference. Titanium Metals Corp. v. Banner, 778 F.2d 775, 780, 227 U.S.P.Q. 773, 777 (Fed. Cir. 1985).

Regarding Independent Claim 1

Applicant has amended Claim 1 to now recite, inter alia,

"...a switching cell with ***a switch*** between the input and the output;

a selector configured for selectively configuring the switching cell into at least two configurations from among the following:

a parallel chopper configuration or

a series chopper configuration or;

an inductive-storage chopper configuration;

wherein ***the switch is configured to chop a voltage of the input in the at least two configurations.***"

No new matter has been added by these amendments as antecedent support may be found in the specification as originally filed, such as at Paragraph [0013] for example.

Dependent claims inherit all of the limitations of the respective parent claim.

Here, Applicant has amended Claim 1 to more clearly describe the claimed invention as having a switch between the input and output that is configured to chop the input voltage regardless of which configuration the converter is in, and to have a selector that is distinct from the switch for configuring the switching cell as desired.

In alleging anticipation of the claimed invention, the Examiner remarks that Midya comprises switches 30 (buck switch) and 34 (boost switch) wherein the cell is capable of using a single switch (either 30 or 34) in the at least two configurations. Paper 3, pages 2-3.

The Examiner further remarks that Midya fully meets all of the limitations of Claim 1 since Midya Fig. 2 shows switch 30 being used in the closed position to produce a boost circuit, and Midya Fig. 3 shows switch 30 being used in a switching duty cycle to produce a buck circuit. The Examiner then concludes that the switch 30 is a single switch capable of being used in the at least two configurations. The Examiner then applies a similar analysis to the Midya switch 34. Paper 3, pages 6-7.

Applicant appreciates the Examiner's detailed analysis, and has amended Claim 1 as set forth above to more clearly describe the claimed invention.

In view of the foregoing amendment, Applicant submits that Midya fails to disclose wherein ***the switch is configured to chop a voltage of the input in the at least two configurations.***

As claimed, Applicant submits that Midya switch 30 is not configured to chop a voltage of the input voltage ***in both the buck and boost configurations***, and that Midya switch 34 is not configured to chop a voltage of the input ***in both the buck and boost configurations***.

At column 3, lines 21-27, Applicant finds Midya to disclose "Whenever the output voltage is required to be greater than the input voltage Vin, switching signal Sw2 with duty cycle D2>0 is applied to Boost switch 34 to produce a Boosted output voltage V2. Whenever signal Sw2 is switching to produce Boosted voltage output, the Buck switch 30 remains in the closed position connecting Vin with Vsw1."

At column 3, lines 29-32, Applicant finds Midya to disclose "In a similar manner, if output voltage V2 is required to be less than Vin, Buck switch signal Sw1 is switched with a duty cycle of D1 while Boost switch 34 remains in the open position."

In view of the foregoing, and in comparing Midya with the claimed invention, Applicant finds Midya to disclose a Boost mode ***where Boost switch 34 switches*** at duty cycle D2, ***and where Buck switch 30 is closed***. Also, Applicant finds Midya to disclose a Buck mode ***where Buck switch 30 switches*** at a duty cycle D1, ***and where the Boost switch 34 is open***. Thus, Applicant finds neither of the Boost switch 34 nor the Buck switch 30 to chop the input voltage ***in both the Boost mode and the Buck mode.***

Accordingly, Applicant submits that Midya does not disclose all of the claimed elements arranged as in the claim, and absent anticipatory disclosure in Midya of each and every element of the claimed invention arranged as in the claim, Midya cannot be anticipatory.

Regarding Claims 16-21 More Specifically

The Examiner alleges anticipation by commenting that "Both transistors are continuously conducting during the period of time that they are ON during the duty cycle. This is a reasonable assertion because it is obvious that both transistors cannot be continuously ON forever if the circuit is to work as intended." Paper 3, page 4.

From the foregoing, it appears that the Examiner is saying that the claimed invention cannot have both transistors continuously ON forever when arranged in the parallel chopper configuration.

However, this is precisely what Applicant is claiming. Where Applicant uses the term "continuously conducting" while in the parallel chopper mode, Applicant means ***"continuously conducting" while in the parallel chopper mode***, and not "conducting during the period of time that they are ON during a duty cycle", as alleged by the Examiner. Support for the claimed invention is provided in Paragraph [0018] and [0026] of the application as originally filed.

If one skilled in the art were to look at the Boost mode of Midya, they would find Boost switch 34 to be switching at duty cycle D2, and ***most definitely not continuously conducting while in the boost mode***, which is the claimed invention.

Applicant respectfully submits that the Examiner's paraphrasing of the claimed invention is entirely contrary to the very language of the claimed invention, and is entirely contrary to the supporting specification.

However, in an effort to advance this case to issue, Applicant has amended the language of Claims 16-21 as set forth above to more specifically claim the subject matter regarded as the invention. Here, Applicant specifically claims that ***the transistors are both continuously conducting in response to the converter operating in the parallel chopper configuration***, which Applicant submits is not disclosed in Midya.

Accordingly, Applicant submits that Midya does not disclose each and every element of the claimed invention arranged as claimed and therefore cannot be anticipatory.

Regarding Claims 22-27 More Specifically

The Examiner alleges anticipation by commenting that "Both transistors are continuously non-conducting during the period of time that they are OFF during the duty cycle. This is a reasonable assertion because it is obvious that both transistors cannot be continuously OFF forever if the circuit is to work as intended." Paper 3, page 4.

From the foregoing, it appears that the Examiner is saying that the claimed invention cannot have both transistors continuously OFF forever when arranged in the series chopper configuration.

However, this is precisely what Applicant is claiming. Where Applicant uses the term "continuously non-conducting" while in the series chopper mode, Applicant means ***"continuously non-conducting" while in the series chopper mode***, and not "non-conducting during the period of time that they are OFF during a duty cycle", as alleged by the Examiner. Support for the claimed invention is provided in Paragraph [0018] and [0031] of the application as originally filed.

If one skilled in the art were to look at the Buck mode of Midya, they would find Buck switch 30 to be switching at duty cycle D1, and ***most definitely not continuously non-conducting while in the buck mode***, which is the claimed invention.

Applicant respectfully submits that the Examiner's paraphrasing of the claimed invention is entirely contrary to the very language of the claimed invention, and is entirely contrary to the supporting specification.

However, in an effort to advance this case to issue, Applicant has amended the language of Claims 22-27 as set forth above to more specifically claim the subject matter regarded as the invention. Here, Applicant specifically claims that ***the transistors are both continuously non-conducting in response to the converter operating in the series chopper configuration***, which Applicant submits is not disclosed in Midya.

Accordingly, Applicant submits that Midya does not disclose each and every element of the claimed invention arranged as claimed and therefore cannot be anticipatory.

Regarding Claims 28-33 and 37 More Specifically

Applicant has canceled Claim 37 and has incorporated all of the limitations thereof into Claims 28-33.

The Examiner alleges anticipation by commenting that "switch 30 always has a period of continuous conduction" including "during the ON period when switch 30 itself is being switched at a duty cycle", and that "switch 34 always has a period of continuous non-conduction" including "during the OFF period when switch 34 itself is being switched at a duty cycle". The Examiner further comments that "Limiting the continuous conduction and non-conduction periods to only the part of the duty cycle when the switches are on and off respectively, is a reasonable assertion because it is obvious that both transistors cannot be continuously ON or continuously OFF forever if the circuit is to work as intended." Paper 3, page 5.

From the foregoing, it appears that the Examiner is saying that the claimed invention cannot have the first transistor continuously ON and the second transistor continuously OFF forever when arranged in an inductive-storage chopper configuration.

However, this is precisely what Applicant is claiming. Where Applicant uses the term "continuously conducting" and "continuously non-conducting" while in the inductive-storage chopper mode, Applicant means ***"continuously conducting" and "continuously non-conducting" while in the inductive-storage chopper mode***, and not conducting only during an ON duty cycle and non-conducting only during an OFF duty cycle, as alleged by the Examiner. Support for the claimed invention is provided in Paragraph [0018] and [0035] of the application as originally filed.

Applicant respectfully submits that the Examiner's paraphrasing of the claimed invention is entirely contrary to the very language of the claimed invention, and is entirely contrary to the supporting specification.

However, in an effort to advance this case to issue, Applicant has amended the language of Claims 28-33 as set forth above to more specifically claim the subject matter regarded as the invention. Here, Applicant specifically claims that ***the first transistor is continuously conducting and the second transistor is continuously non-conducting in response to the converter operating in the inductive-storage chopper configuration***, which Applicant submits is not disclosed in Midya.

Accordingly, Applicant submits that Midya does not disclose each and every element of the claimed invention arranged as claimed and therefore cannot be anticipatory.

Regarding Claim 36 More Specifically

Applicant has amended Claim 36 in a manner similar to amended Claim 1, but with respect to each of the three configurations. In view of the amendment and foregoing remarks relating to the allowability of Claim 1, Applicant submits that Claim 36 is allowable at least for the reason that it depends from an allowable claim.

In view of the amendment and foregoing remarks, Applicant submits that Midya does not disclose each and every element of the claimed invention arranged as claimed and therefore cannot be anticipatory. Accordingly, Applicant respectfully submits that the Examiner's rejection under 35 U.S.C. §102(b) has been traversed, and requests that the Examiner reconsider and withdraw of this rejection.

Rejections Under 35 U.S.C. §103(a)

Claim 35 stands rejected un 35 U.S.C. §103(a) as being unpatentable over Midya in view of Usui (U.S. Patent Publication No. 2002/0011825, hereinafter Usui) per the first Detailed Action.

Applicant traverses this rejection for the following reasons.

Applicant respectfully submits that if an independent claim is non-obvious, then any claim depending therefrom is non-obvious. MPEP §2143.03 referencing *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988).

In view of Claim 35 being dependent upon Claim 1, and in view of the amendment and foregoing remarks, Applicant submits that Claim 35 is allowable at least for the reason that it depends from an allowable claim.

In light of the forgoing amendment and remarks, Applicant respectfully submits that the Examiner's rejections under 35 U.S.C. §102(b) and 35 U.S.C. §103(a) have been traversed, and respectfully request that the Examiner reconsider and withdraw these rejections.

Regarding New Claims 38-42

Applicant has added new Claims 38-42 to capture previously disclosed but unclaimed subject matter. No new matter has been added as antecedent support can be found in the application as originally filed, such as in the originally filed claims, and at Paragraphs [0026], [0029], [0031], [0034], [0035] and [0037], for example. In view of the remarks set forth above, Applicant submits that new Claims 38-42 are allowable, and respectfully requests notice thereof.

The Commissioner is hereby authorized to charge any additional fees that may be required for this amendment, or credit any overpayment, to Deposit Account No. 50-2513. In the event that an extension of time is required, or may be required in addition to that requested in a petition for extension of time, the Commissioner is requested to grant a petition for that extension of time that is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to the above-identified Deposit Account.

Respectfully submitted,

CANTOR COLBURN LLP

Applicant's Attorneys

By: _____

David Arnold
Registration No: 48,894
Customer No. 23413

Address: 55 Griffin Road South, Bloomfield, Connecticut 06002
Telephone: (860) 286-2929
Fax: (860) 286-0115

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